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SUMMARY

The objective of this paper is to present the main characteristics of advanced logistics in France. Our purpose is not to make an exhaustive description of the french situation, but to give an understandable view of the current state of those systems.

The paper first define what we call "logistics" in France and in which way it is integrated in firms management (chapter 1).

It also points out some geographic, economic and regulation characteristics of french situation that have significant impacts on the development of advanced logistics (chapter 2).

The paper briefly presents the most relevant advanced logistic organizations in manufacturing, distribution, and logistics suppling. It points out the so-called "driving-forces" which lead french firms to develop such systems (chapter 3).

The paper then focus on advanced logistics characteristics observed in France, and presents the main information and communication systems which are at their basis (chapter 4).

As a conculsion, it presents the main difficulties that firms still have to overcome to develop advanced logistics and its further developments.

ABOUT THE AUTHOR

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She is especially interested in and competent in the following fields : logistics (as a management concept, in the strategical and tactical decisions it leads to), transportation chains (how are they designed?, how are they managed?, how are they integrated in global industrial logistic chains?), industrial maintenance (its stakes in production management and in operating complex systems, its necessary integration in the design of products, the so-called Intergrated Logistic Support), technics et methods to design and develop information (with informatics), communication (with EDI systems) and decision systems in logistics.

1 - WHAT DOES LOGISTICS MEAN IN FRANCE?

1-1- THE CONCEPT

In France, logistics consists in a global approach of the whole physical circulation of goods : from raw materials to finished products sold to consumers, including spare parts for products that have to be supported.

What is the aim of logistics? It is to design a cost effective organization able to handle the whole physical circulation of goods, to increase the service level offered to consumers and to produce supply more suited to the fluctuations and hazards of markets which are diversifying, changing and becoming international.

Historically, in France, industrial logistics came from transportation. Logistics had developed itself by including many services which were previously considered as subsidiary to transportation such as : stock holding, break-bulking, end-distribution etc. In the beginning of the 80s, logistics has taken an interest in industrial and distribution management, whether logistics activities are contracted out or not : stock levels, production rhythms, plant stock or store locations etc.

Now logistics is a full management process which reconsiders the whole sourcing-production-distribution system. It takes part in many decisions such as : where, when, in what quantity and at what rate companies should supply, produce and deliver? It also intervenes in the design of products to ensure their transportability and supportability at a good global price (optimizing life cycle cost) and with a good service level. Therefore logistics is a transverse function operating at stategic, organizational and technical levels.

Being in charge of the whole physical chain management, logistics has to be informed of what is happening at each stage of the process to take the right decisions. It highlights the importance of information management in logistics to control physical flows. For this reason logistics always has to organize a parallel information and communication system which helps to forecast, plan, follow the process and react against any disruption in the process.

Logistics is consequently considered in France as a complex activity which combines a wide range of techniques to handle just as well goods and information. The management of this complexity is an important role of advanced logistics systems. We can notice that in advanced logistics the information and communication system is designed at the same time, if not before, the physical network. And the more advanced is logistics, the more important is the role of information and communication systems which often includes decision-making systems.

1-2- STATUS OF LOGISTICS IN FRENCH FIRMS

Logistics is an up-to-date phenomenon in business and the concept is now rather clearly and well understood in France. But in firms management its development as a full function in charge of the whole physical circulation is far from being achieved. Development of logistics is actually at various stages in firms, depending on many internal and external factors. Need for competive advantage for quality and cost control seems to be the more stimulating factor for advanced logistics. The increasing decisions logistics takes and the real place it has in firm organizations show that the control of flows has become strategic for everyone and that logistics will keep up developing in all economic sectors. Today in France, only a minority of companies have a so-called advanced logistic organization. But the companies who have developed advanced logistics are often the most competitive ones of their branch.

How does logistics appear in internal firms management? Logistics does not always appear in the organization chart of companies. It is sometimes an undefined function shared by many actors scattered in many divisions. It can be a technical function attached to one of the main departments, for example the commercial or the manufacturing one. In such cases, logistic projects often come up against coordination problems and cannot succeed because of a lack of decision power.

In most firms involved in advanced logistic systems, logistics apprears clearly in the organization chart as a department. Then logistics has the same recognized power than marketing, manufacturing, informatics, personnel or finance. It is in charge of all the planning, coordination and control of the physical flow in the whole chain, and can negociate with all these functions to develop a really global management of its services. But this overall responsibility for the control of the material flow between different departments in a company is of no use if there is no will to work together. The capacity to mix abilities in projects is a success factor of advanced logistic organization inside firms.

If internal logistic management is important, in particular for the individual profitability of each company, the ambition of the logistic process is to optimize the whole chain from raw material to end-product delivered at consumer place. Decisions and operations in logistic chains are always shared between manufacturing companies, transport (or logistic) suppliers and retailers. And this phenomenon is extending with the development of subcontracting activities. What about logistic management when many different companies are involved in the chain realization?

Traditionally, french firms do have problems to find cooperating process. But they are aware that they must improve joint logistic management. Some examples prove that it is possible to develop common advanced solutions to control physical flows and to operate information and communication systems.

2 - SOME INFORMATION ABOUT FRANCE

Because logistics deals with physical flows and technical solutions are influenced by the general environment of a country, we must point out the main characteristics of the french situation.

From a geographic point of view, France has a central position in Europe and is rather well integrated in European infrastructures. Like other EEC countries, France goes on improving connections with european networks. In a world-wide context, France is also open to the Atlantic Ocean and the Mediterranean Sea with two main ports : Le Havre (USA access) and Marseille-Fos (access to Far East). France can play a key-role in European communications in a world-wide context with a significant impact of firm location strategy. But this situation can lead to a simple cross through international transportation activity with many drawbacks and few positive economic consequences. Trends in physical setting up confirm that logistics can support expanding strategies, but often with a concentration of both production and distribution centers that increases the need for transportation.

Inland transportation is all the more developed in France because it is a fairly flat country. Even if the country is well served, infrastructure networks are characterized by the historical Paris-centred phenomenon. All infrastructure evolutions actually planned show an improvement of cross-country links in particular for the road network. France specially develops its highway and high speed railway networks. France also offers a network of cities with dedicated areas for freight management with multimodal infrastructures and superstructures available. Because most advanced logistic activities actually move from inner urban areas where their efficiency is impaired by difficult vehicle access, lack of room for expansion and often antiquate buildings, to decentralized and specialized areas, many french cities can become interesting logistic points for european or multinational firms location.

From an economic point of view, France is the second largest economy in the EEC. France is located in the south-west of the "golden arc" of Europe (from Netherlands to north Italia, through West Germany). It partly explains the increasing imbalanced situation between north and south of France concerning economic activities, in particular when international firms select their locations in Europe. This phenomenon is aggravated by the polarization effect of Paris. But the dramatic clogging of most networks in north of Europe and the development of south European countries can influence new strategies favourable to south-east France; because France has a relatively outlying position in Europe but is widely open to extra-european international exchanges.

Concerning domestic distribution, except Paris the most important pole of urbanization and a few cities like Lyon or Marseilles, consumer locations in France are spread all over the country. It probably explains the densely and the organization into a hierarchy of advanced logistic networks to perform high service level through the whole french (and european) territory.

Looking at regulation logistics activities in particular transportation are far from being free of regulation in France. The less free is the railway sector : SNCF and its departments or subsidiaries (like FRET-SNCF for general cargo and CNC for containerized cargo) always have the monopoly for rail transportation. But they are almost fre to offer any service they want. Air and road transportation have been mostly deregulate.

In road haulage, the number of trucking companies that were allowed to provide services, the number of vehicles that could be operated and the distances they could cover were limited by a licence system. Rates and fares were also closely regulated by the french TRO which was also compulsory for inland railway transportation. The french regulatory regime of licences began to be partly liberalized in 1979-80. Many autorizations had been given by the french government, leading to harsher competition between companies and to a de facto ineffectiveness of compulsory rates. Road transportation was officially totally deregulated on January, 1, 1989.

Consequently transportation is becoming in France more shipper-oriented (in terms of services and tariffs) and more accessible to newcomers (less entry barriers). Reforms in transport regulation have certainly stimulated vitality and creativity in transportation, urging transportation firms to develop advanced logistics and communications systems, because they are facing a new competitive situation.

Because France is involved in the Common Market construction (the so-called EEC), regulations will probably go on evoluting. EEC countries are to harmonize regulations in economic legal and technical fields. They will probably adopt common regulations for logistics activities. European standards will also probably be created and adopted with direct influence in logistic activities : transport security, EDI standards...

If the erasing of borders inside EEC in 1993 is an important symbol, complete elimination of national regulations will probably never be achieved. Of course, the "1993 horizon" has an accelerating effects on both manufacturers and distributors strategies. It is obvious that the unification of the E.C. market will cause more severe competition in all economic fields. In fact, advanced logistics can no longer be considered outside an european if not world-wide logic.

This logic is all the more well-known in France because many companies are operating in a world-wide, at least in an european-wide, arena. They can can be initially either french firms which have expended to the international level or have jointed an international network, or foreign companies which have settle down in France some subsidiary. And those companies often were the first ones to develop advanced logistics in France.

3 - TOWARDS ADVANCED LOGISTICS IN FIRMS

3-1- MANUFACTURING LOGISTICS

The french industrial structure, to supply an increasingly wide variety of goods, in somewhat more limited quantities, has been changing from a heavy raw-material production to light assembly and processing. Marketing and logistics have consequently become more important and help production with better forcasts to exactly adapt products and joint-services to consumer demand. Operating productivity has been powerfully improved since the begining of the 1980's by using computerized technologies and automated processes, even in small and medium sized companies.

Manufacturers have also extended their contracting out to benefit from cheaper man-power or to limit heavy productive investments. But many manufacturers (in particular those working with stockless systems) are reducing the overall number of suppliers and eliminating suppliers with poor logistic reliability or those situated in areas with no possibilities for high transport service.

Problems found in the control of inventories have been dealt with an increasing attention for the last ten years. As practices have been improved by adopting some kind of "just-in-time" organizations, stock levels have steadily declined in each step of the manufacturing process (stocks of finished goods, work-in-process and raw materials).

In advanced manufacturing logistics, production has definitely entered the logistics sphere. Production is no longer considered as a simple technical transformation process (as it is in a "classic" industrial culture), but as a mixed and complex process the rythms of which have to be studied in accordance with the whole logistic chain (only produce what will be [or is] sold, and not try to sell what is produced). In such systems the whole automation of corporation integrating sales, design and production departments is already being achieved and firms are looking for computer integrated manufactuting (CIM). But very few companies have in France reached this level.

Advanced manufacturing logistics manage a complex physical situation to follow demand fluctuations, perform strict inventory control and reduce inventories. There are more numerous shipments and more frequent deliveries between various plants. The whole process covers larger distances than before but with less bulky and smaller quantities transported.

3-2- DISTRIBUTION LOGISTICS

Because distribution logistics takes over finished products up to end-consumers, it is now recognized as an important part of the marketing within companies. Nowadays, to influence positively the market distribution logistics must guarantee delivery time for the product itself and the parts in the logistic support service. Aside from its impacts on manufacturing, logistics has powerfully changed distribution structures in France. Because of the rapid increase in the types of products, retail stores and sales offices unless they have an adequate logistic organization are often unable to keep up coping either with a large inventory of products types or with consumer demand.

It has motivated the nation-wide grouping of department stores and large supermarkets companies and the concentration of wholesalers and retailers (covering up the whole nation-wide area). Chain store management methods has permitted to increase both number and surface of stores. Logistics has also permitted the diversification of distribution forms : general mass distribution stores, specialized mass selling stores (for shoes, clothes, do-it-yourself parts...), or even without-stores distribution like mail-order selling...

In France, the most important phenomenon is mass distribution. In 1965, superstores and supermarkets(1) represented less than 2% of the retail distribution market. In 1985, they covered more than 25% with a faster growth rate for superstores since 1985(2). Most of the observed advanced distribution logistic systems belong to this channel. Mass retailing companies which are concentrating have improved their stockholding management, using informatic systems and automated handling systems, and their communication process with manufacturers and logistics suppliers, using EDI systems.

Another interesting field from the logistics point of view is the mail-order channel. France is at the third position in Europe. It has only a slight market share in retailing (around 3% in 1988) but shows a dynamic increase. Advanced logistics systems has been developed in this field to satisfy rapidly consumer demands (a famous french mail-order retailer promises to deliver any consumer less than 48 hours after its order). They have improved demand recording, using the french MINITEL network in which consumers put in their orders. Mail-order retailers can immediately use information with their computers without keyboarding. They have also improved delivering time by operating automatic preparing systems and express parcel services.

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(1) A french superstore is a self-service store with a minimum sale area of 2 500 m^2, a complete assortment with food counters (3 000 to 5 000 references) and others counters (20 000 to 35 000 references). A french supermarket is a self-service store with a minimum sale area of 400 m^2, a large food counters (2 500 to 4 500 references) and some others products (500 to 1 500 references).

(2) In 1989, there were more than 770 superstores in France, with an average sale area of 5.500 m2, with an average number of 27 check-out.

3-3- LOGISTICS SUPPLY

In France, most shippers have given up the transport on own account. They have been looking for transportation and logistics suppliers in order to reduce costs and enhance service levels of freight circulation since the beginning of the 80s. In 1988 transport on own account in France represents less than 20% of goods traffic. In industry, but also in distribution, a vertical "disintegration" of transportation activity has been noticed, partly because private professionnal freight carriers have shown up.

The movement of subcontracting transport activities has extended to other logistics services partly because transportation firms have developed break-bulk points and improved their physical network structure to make fleet management profitable. By divorcing the storage and break-bulk functions and sometimes performing them in different locations, firms have been able to reconcile conflicting transportation and stockholding cost objectives. This kind of "hub-and-spoke" system which combines both full loads (to the fleet profitability) and high frequencies (to the service level) is now common in shipping (with ports) and railroads (with marshalling yards) and in road (with transhipment depots).

In nodal points logistic suppliers can operate some value-added operations such as inventory management, delivery, handling, warehousing, even packaging, and sometimes production (assembling). Stock previously held in shippers' own depots are being consolidated in larger warehouses with higher technical specifications set up by specialist contractors, who are often also transportation operators. By concentrating inventory in fewer locations they could achieve substancial stock reduction while taking advantage of economies of scale in warehousing (cost reduction in operations). By increasing scale and sophistication of mechanical handling systems, moving towards automated warehousing, they could improve productivity. They also improved terminal facilities and planning systems to organize transport access and eliminate any waiting time of transportation vehicles.

Most french carriers consider that, due to ever declining rates of transport prices and ever increasing of its costs, benefits are no more possible if they exclusively perform a traction activity. That explains why many transport carriers are becoming logistic suppliers adding more lucrative logistic services to their basic transportation activity. Some of them even get rid of the transportation activity itself (they subcontract to "simple carriers") to focus on other logistics services. In advanced services, the pure transportation component is not the most important part of overall logistics costs.

The result of the develoment of advanced highly specialized and efficient logistic systems is the dualism and hierarchy of the french transportation sector, in particular in road freight transportation. On one side there are the transport subcontractors (most of them are small business scale companies),

with little autonomy, only involved in technical operations of low added-value. On the other side there are few large-scale transport chains organizors and managers who benefit from their capacity to mobilize multilple actors, techniques and networks. They have built at least a nation-wide transportation network covering all areas with many service offices and terminals throughout the country, and some information and communication systems in progress. They offer a complete logistic service, and are often able to connect with other networks, in particular for international trade.

Among such logistic suppliers we can notice door-to-door multimodal operators : container shipping companies (like CGM), air freight express carriers (like Jet Service, TAT) and even railways subsidiaries (like CNC, Chronofroid, Chronodis or Fret Chrono). Their competency relies in building and guaranteeing the quality of the whole multimodal chain.

But the quantity and quality characteristics of shippers demand certainly explain the greater dependence of land transportation on road transport by trucks. In France road freight transportation because of its flexibility and its capacity to improve and adapt services provided seems to have an unchallengeable position in land transportation. In 1988, it represents more than 70% of goods traffic. Major road hauliers also extend their activities to other logistics services. They are especially competent in mass distribution services and in JIT basis services.

In fact the french transportation market because of the greater competition between transportation firms and the specificy of each shipper demand, shows a real market segmentation. Some types of advanced logistic specializations can be outlined.

The specialization by logistic family of products permits to reinforce activities by grouping goods that are logistically compatible. Shipping round tour, mixed load shipping and scheduled shipping are possible and developed. This specialization exist for example in JIT car manufacturing work-in-process supplying, in fresh or deep-frozen food transportation, or in sensitive (dangerous) goods transportation.

The specialization on particular gaps of the logistic market permits economy of scales by becoming the specialist of a special service. It is the example of logistics services in rapid collection and distribution of small shipping quantities (express parcel services like Groupe Heppner), or in coat hanger clothing delivering (like Transvet) or in informatic equipment distribution and support (like Calbermatic).

A kind of specialization can also be found in developing specific networks to forward the massive flows of goods generated by proactive logistics with a high productivity level (with many examples in chain stores distribution), and/or in developing specific networks to forward specifically goods generated by a reactive logistics with a high service level (with some examples in providing parts in a logistic support service). The transportation fleet and the physical network is adapted to the routes, to the volume to move and the frequency of deliveries.

4 - ADVANCED LOGISTICS CHARACTERISTICS

4-1- NEW COOPERATION BETWEEN ECONOMIC ACTORS

Advanced logistics tries to ensure the quality of physical flows at the minimum cost. Its objectives are continuity and fluidity of the flows, reactivity of organizations to cope with markets fluctuations and the hazards of physical operations and reliability of the chains which ensure the flows tension because any disruption would lead to a loss of production or sales. Any delay can paralyze the downstream links in a chain and its effects can also spread throughout the whole chain (downstream and upstream). Any disruption can ruin the logistics perfomance and costs benefits all the more rapidly since the organization is just-in-time. The more tensed the logistics chain is, the more important the extra-costs induced by poor quality are. Any error leads more and more frequently to direct extra costs or to an indirect disruption of service. The hazard, unavoidable in logistics, must absolutely be overcome.

Because chains are more and more complex and imply an increasing number of actors, because of the increase in risk if any disruption occurs, a higher quality logistics has to be performed. Firms are now conscious of the necessity of working together and try to find new cooperation. in order to detect problems, analyse critical situations, and find correcting actions to perform global quality and effectiveness.

The stakes in offering the quality of the transportation service are important. It explains why , more than before, shippers select one [or only a few] operator[s] as prime contracting haulier[s], who is [are] responsible for all transport and distribution activities, even if "real transport" is subcontracted out. Advanced logistics shows closer relationships between shippers and logistics suppliers who adapt the service to the particular needs of their customers. In stockholding for example, they mix stockless management for nearby exchanges, and higher inventory control in foreign trade (where transportation chains are longer, less frequent and less punctual and with more complex administration).

It gives transportation firms the opportunity to take a greater part in the economic field, if they manage to offer an increased and modular supply of logistic services. But logistics suppliers have to interface their management systems with the one of industry and distribution in order to track shipments and control stockholding. The logistics objective of all those systems consists in : the global planning of physical flows (if possible directly driven by the market), the follow through of all operations in order to detect hazards (tracking), and if necessary the activation of backup networks to overcome negative effects of hazards.

4-2- INFORMATION AND COMMUNICATION SYSTEMS

The search for eliminating inefficiencies (looking for zero delay, zero inventory, zero default, zero red tape) is certainly one of the dynamic factors which push logistics to develop advanced information and communication systems. In fact there is no advanced logistics without informatics. To develop internal management systems is a kind of prerequisite.

4-2-1- INTERNAL SYSTEMS

Computer equipment level rate have been constantly increasing in France from 1980 to 1990. Today, more than 85% of companies have computers. Generalization of informatic equipments represents an opportuneness for logistics and explains advanced logistics developments. In fact, only a few companies operate logistic informatic applications. This average 85% rate also hides significant differences between economic branches. In transportation it hides the relative lateness of road transport firms, only 75% of them have computers. Here again we must underline the diffence between "exclusive road transportation" companies (less than 50% of them have computers(1)) and logistics suppliers (more than 80% of them have computers).

But the gap between shippers' culture and that of transport operators is becoming less dramatic than before. For a long time, innovation in logistics had tended to occur only in techniques rather than in its management or organization. The potential for organizational innovation was considerable and explains why firms have been developing internal logitics systems for the last ten years. In fact complexity of the services provided has speeded-up a general development of the know-how in logistics, information processing and marketing. It has also led to investments in know-how and software : both "non-material" investments.

We are not to focus on internal systems of shippers which are in France classic ones. Manufacturers are developing computer-aided manufacturing, sourcing, stockholding... and are trying to a better integration of all their informatic applications. Retailers are developing computer systems for supplying decisions, stockholding management, stores management improvement... All shippers are trying to improve communication among the headquarters, branches and local business offices to collect and distribute corporate news about freight transport control, and to conduct quick and efficient processing of the enormous clerical work and communications created by logistics.

(1) In fact the road transportation sector shows a great diversity which explains this situation. There were 30 200 trucking companies in 1987, among which only 76 companies had more than 200 employees. Among trucking companies in 1987, 22.402 companies had 0 to 5 employees. In 1989, only 14 companies have a more than 1 billion turnover and only 20 companies have more than 500 trucks, among them 7 have more than 1000 trucks.

Let us have a more precise look at logistics suppliers internal advanced systems.

Many transport companies run software for fleet management (vehicles, containers, packages...), and software for route management, including the planning of routes and sometimes overcoming momentary congestion of facilities. Notice that some radio-guidance system are privately developed by some major companies. Research programs are in process to develop in France traffic control facilities in particular in urban areas, gathering information regarding traffic conditions and giving such information to drivers for safe and smooth flow of traffic.

Those fleet management systems are being complemented by other systems dedicated to track vehicles (via satellite observation(1)), and to revise routing (with embarked communication systems). French and european research programs are trying to develop navigation help (localization, trafic congestion information, optimization of travel), information services (digital road map), communication services. Some systems, connected to dispatched equipment, can also perform computer-aided maintenance of the sensitive mobile equipment (those on critical paths in the network for example).

Shipment tracking systems which can accurately identify the location of goods and make sure the network is operating normally are also developed, especially for express parcel services or multimodal door-to-door services. This kind of system is based on the network-wide online system, and above all on the identification, codification, or symbolization of lots and consignments (with bar-codes, tags....). At certain points in the transportation process (when parcel is collected, when it arrives in or comes out at each terminal, and when it is delivered), information about the parcel is entered from shipping slips to terminal units and memorized one by one in the host computer through communication lines. Therefore the computer keeps track of the location of all parcels.

Computerization and automatization is also observable in warehousing and stock control, in picking, in delivery preparation, in stocks management, in sorting out, in packaging systems, in just-in-time and synchronous delivery management... This kind of system is in general associated to systems dedicated to manage the reliability of complex equipment. They perform computer-aided maintenance of the sensitive static equipment (at the bottlenecks for example).

But logistics efficiency does not result from the accumulation of systems. The benefits from transportation chains, the internal profitability of each link and the global profitability of the whole chain, can only be realized through the synergism between the multiple systems that are developed. The introduction of nation-wide online system is necessary, first internal in company networks, then opened to their transport subcontractors, shippers and all logistics partners.

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(1) Two satellite tracking systems for land transportation are developed in Europe and will be fully operating in 1994 : the LOCSTAR and EUTELTRACS systems. At the moment they are not much used, partly because they are rather expensive and not fully operational.

4-2-2- EDI SYSTEMS

Advanced logistics shows that flows management cannot be restricted by the borders of a unique company, but is widenning out to all companies involved in logistic chains. Logistics will not reach its objectives (global cost and service level) if there is no cooperation nor communication between the various economic actors. It is a fact that advanced logistics leads to more partnership on both physical and information flows. Because many of the partners linked in the "network firm" are scattered, there is a need for powerful communication networks and common information systems to have direct connections to customers and other logistics suppliers systems, in order to guarantee the physical flows will not be slow because of the slowness of information processing (whether they are paperless or not). It certainly explains the actual interest in EDI (Electronic Data Interchange) technics. Many EDI systems are developing in France. We have choosen the "best examples" from the logistics point of view. They all are looking for the following effects : quick accurate easy ordering, shortened delivery time for required amount preventing the absence of stocks, reduced inventories, and above all reduction in clerical labor hours, in processing errors, in returned goods (reduction of incorrect delivery)...

The communication between informatic systems is particularly important in just-in-time manufacturing. French car manufacturers have this experience. They found impossible to reduce stock levels and produce with JIT techniques without cooperating with of all their industrial and logistic suppliers. They worked together in a sectorial group called GALIA (which makes part of the european sectorial group ODETTE) and succeeded to build a common language to manage work-in-process flows. An EDI system is available to perform paperless communications between car-manufacturer, work-in-process suppliers and logistics suppliers.

In mass distribution an EDI system is also in process. French retailers and manufacturers have been working on a common language since 1975. Their first objective was to standardize the four most important papers : orders, deliveries, invoices and payments. Today, the GENCOD language covers all information exchanges between retailers, manufacturers and logistics suppliers, and the operating ALLEGRO EDI system provides paperless communications for all GENCOD messages.

Multimodal transport operators also have long understood the importance of information exchanges between transport operators and between transport operators and their shippers, in particular to follow through complex chains. A group of french operators have been working on an EDI standard called INOVERT since 1987. The messages included in this language have the european EDIFACT agreement. They are very useful for express parcel services.

In shipping, some teleport EDI systems are avialable. La Have Port Authority have develop the ADEMAR system to follow through ships and goods and to communicate with logistics suppliers. The port community of Marseille-Fos has developed a three components EDI system : SOFI for customs declaring, ESCALE for shipping control and PROTIS for goods management. All firms involved in a transportation chain passing through the port can dialogue via this system, exchange information and follow through their shipments.

5 - CONCLUSION

As a conclusion we would like to focus on some key-problems that will have to be resolved to achieve advanced logistics development.

Logistics suppliers are today facing a big communication problem. They must develop a three levels sytem : first level the internal communication among their proper locations, in general with internal language, second level a cooperative communication between logistic suppliers to optimize physical operations, third level the communication with shippers to improve the coordination of the whole logistic chain (for example, in JIT organization, it is necessary to synchronize the parts delivering with assembling and with inventory management).

But because of the low transport rates which result from competition, it becomes more and more difficult to develop those systems, which are in general very expensive. It seems that only a few transport companies will succeed in developing advanced logistic systems, probably the biggest ones and those who have other logistics activities beside transportation. As a result, the immense scale of some non-material investment ploughed back into computerized systems will probably create an irreversible situation in the transport sector. In some high transportation services, the entry-costs to any newcomer will be so high that there will be no other choice than to join the organization and pay the price for it, or to disappear.

Some questions are also arising concerning EDI standards. Will EDI standards keep on to be broken into segments, each segment corresponding to an industrial sector? If so, transport operators would be bothered because they operate in many of them. They would have to maintain many translators which is a tremendous work. Will EDI standards specific to transportation be developed? If they will, they must be compatible with the standards of all sectors that interface with transport. Considering the national characteristics of the transportation market, how will the problem of international standards be resolved? If not, how will international logistic chains be managed?

But EDI systems are useless if there is no cooperation between firms. French companies must absolutely improve cooperation between firms and between departments in companies. This probably is in France one of the greatest difficulties to overcome. Department boundaries are very strong and it is very difficult to make them work together as showed the difficulties met in "Total Quality Management" experiences.

Logistics is now a rather current management process in France. And we have many examples of advanced logistics systems. The management of the international area will accelerate the development of advanced logistics systems. It will probably put through a riddle all firms : the "mono-firms" nationally-centred will probably be marginalized. Those who will not have information and communication systems will probably be subcontractors of major companies to whom they will probably "pay access" to their networks. This is the challenge french firms are facing and advanced logistics is a powerfull weapon they will use.